

CLAIMS

1. A PEM fuel cell comprising (1) a proton exchange membrane having opposing cathode and anode faces on opposite sides of said membrane, (2) a gas-permeable, electrically-conductive current collector engaging at least one of said faces, (3) a current-collecting plate engaging said gas-permeable current collector and defining a gas flow-field confronting said gas-permeable current collector, said flow-field comprising a plurality of lands engaging said gas-permeable current collector and defining a plurality of gas flow-channels, each of said flow-channels having (a) an inlet leg communicating with a supply manifold that supplies a reactant gas to all said flow-channels, (b) an exit leg communicating with an exhaust manifold that receives said reactant gas from all of said flow-channels, and (c) a branched midsection between said legs comprising first and second branches each having a first end communicating with said inlet leg and a second end communicating with said exit leg.

2. A PEM fuel cell according to claim 1 wherein said flow-channels are non-serpentine.

3. A PEM fuel cell according to claim 1 wherein said flow-channels are serpentine.

4. A PEM fuel cell according to claim 1 wherein said midsection is bifurcated.

5. A PEM fuel cell according to claim 1 wherein said flow-field is adapted to supply H₂ to the anode face of said membrane, and said branched midsection comprises up to five said branches.

6. A PEM fuel cell according to claim 1 wherein said flow-field is adapted to supply air to the cathode face of said membrane, and said branched midsection comprises up to three said branches